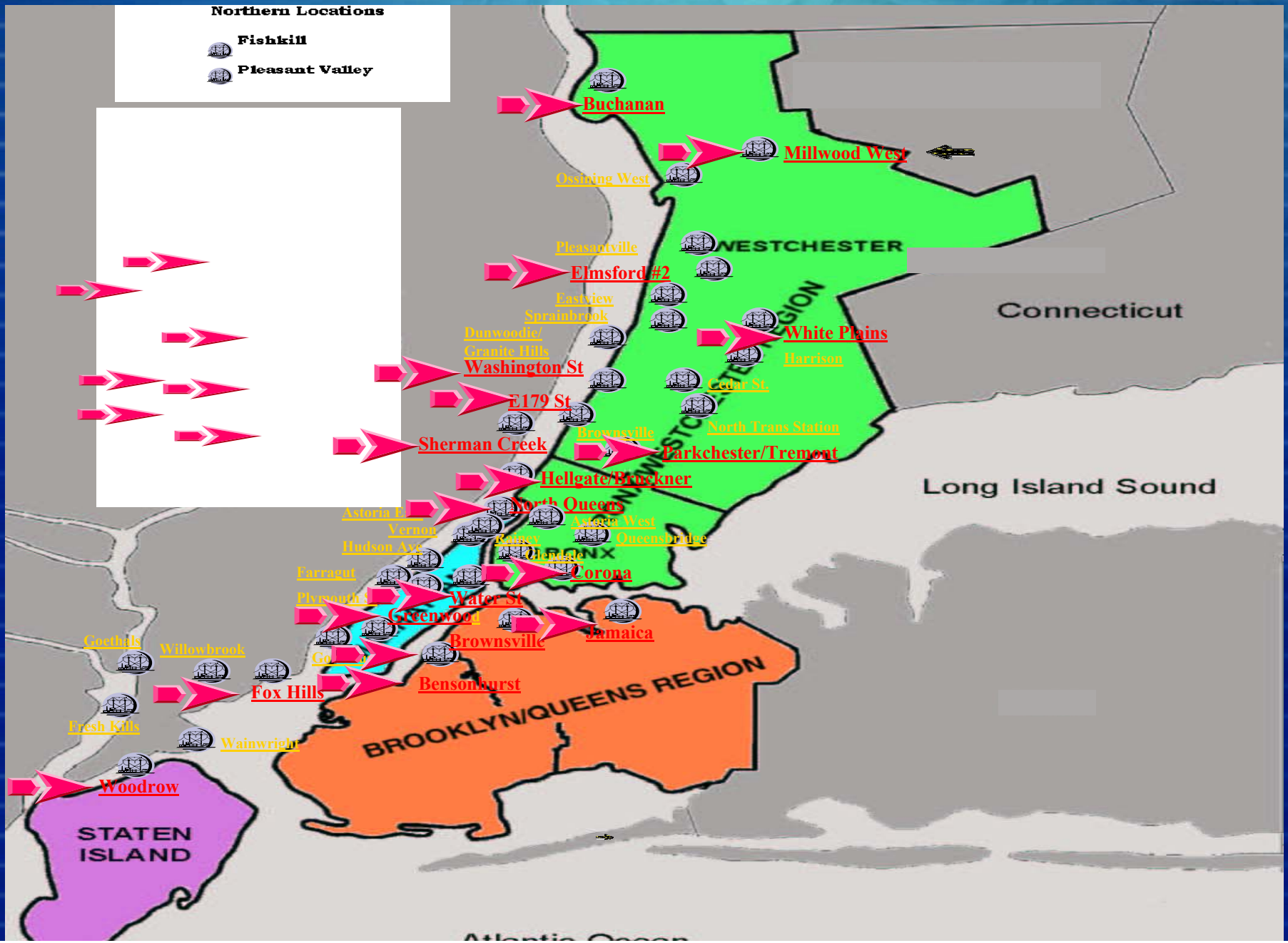
Consolidated Edison Of New York, Inc.

SF6 Gas Management Program


Northern Locations
Fishkill
Pleasant Valley
Buchanan
Millwood West
Ossining West
Pleasantville
Elmsford #2
WESTCHESTER
Eastview
Sprainbrook
Dunwoodie/
Granite Hills
Washington St
E179 St
Sherman Creek
White Plains
Harrison
Cedar St.
North Trans Station
Brownsville
Parkchester/Tremont
Hellgate/Bruckner
North Queens
Astoria E
Vernon
Hudson Ave
Astoria West
Queensbridge
Bailey
Farragut
Corona
Plymouth
Water St
Greenwood
Brownsville
Jamaica
Goethals
Willowbrook
Fox Hills
Bensonhurst
Fresh Kills
Wainwright
Woodrow
STATEN ISLAND
BROOKLYN/QUEENS REGION
Connecticut
Long Island Sound

SF6 Process

- Con Edison instituted a SF6 maintenance management program in 1999.
- All purchases of SF6 cylinders were identified (with a unique tag #) inventoried, weighed and checked for leaks. This procedure was being performed by in-house forces until 2002.
- Presently an approved vendor provides this service as part of their service agreement.

Sf6

- After the SF6 gas cylinder was used, the remaining gas was recycled into a dedicated reclaiming carts. The empty cylinders were then returned to the manufacturer.
- This procedure was trended and it was found that approximately 5 pounds of gas per cylinder was being recycled. It was not a cost effective use of labor.
- This effort is now being performed by the vendor. An inventory of returned gas is reported by the vendor on a monthly basis.

Opportunities

- An aggressive effort has and is being made to repair SF6 leaks where technically and economically feasible.
- The success of the leak repair program has reduced the amount of SF6 purchased and SF6 gas released to the atmosphere.
- A long term replacement strategy based on maintenance history, spare parts availability and duty was developed and is being implemented.

Opportunities

- To date Con Edison has replaced over one hundred 138 KV dual pressure breakers with single pressure puffers breakers and has replaced eight 345 KV breakers containing SF6 gas as part of the insulating system.
- This effort has also helped reduced the overall SF6 system capacity, gas usage and emissions.

Opportunities

- **Con Edison is currently researching new methods to economically repair SF6 equipment and reduce emissions.**
- **To date Con Edison's programs have resulted in a reduction of approximately 150,000 pounds of SF6.**

Con Edison's Plan Shows Results

- During 2001 con Edison's substation operations department has aggressively reduced the emission of SF6 gas.
- By employing the use of a maintenance management tracking system (maximo), to track the number of gas calls made on a piece of equipment.
- By using EPRI's maintenance management workstation (MMW) to trend the gas call data.

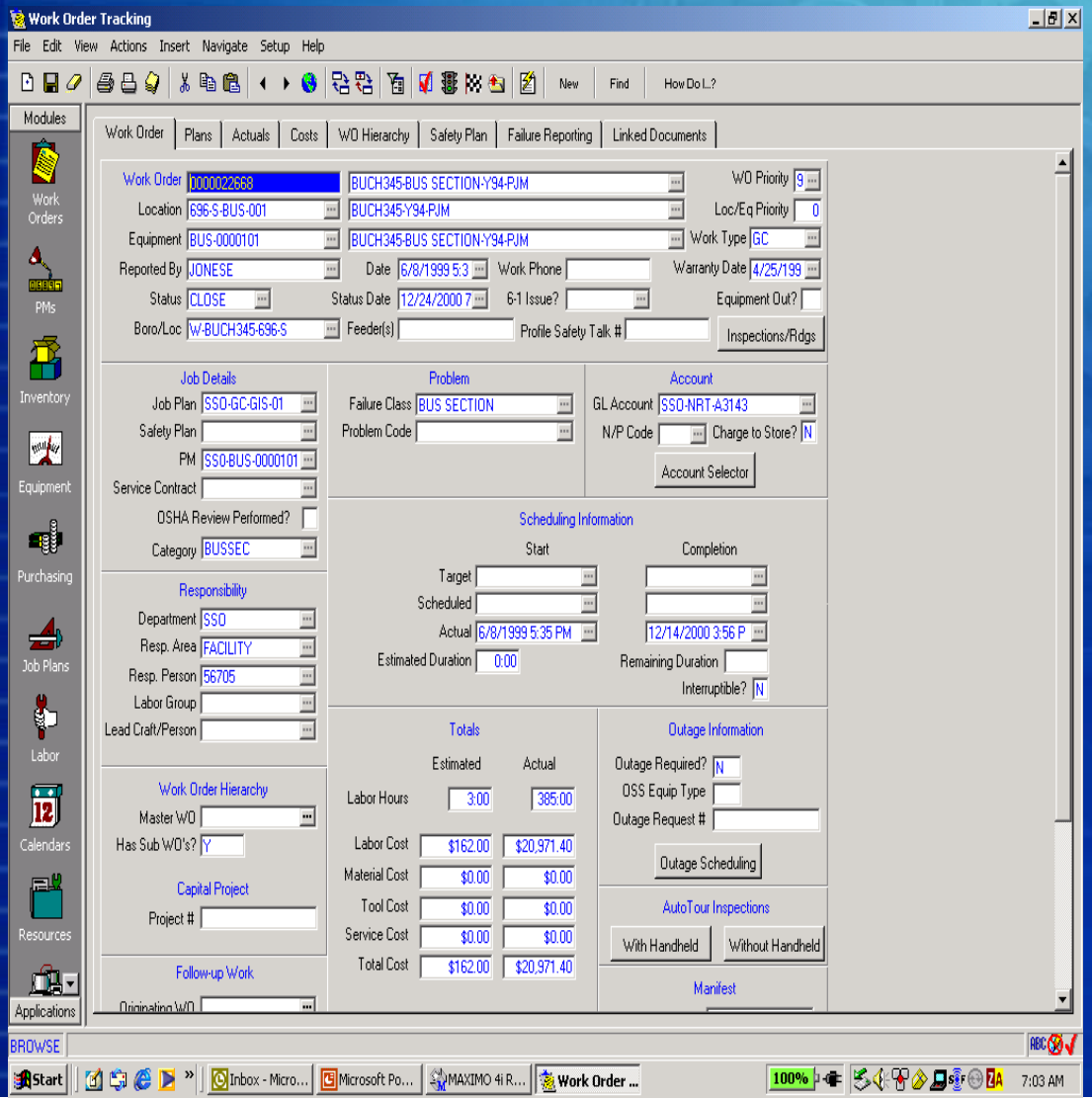
Con Edison's Plan Shows Results

- Substation operations has employed the use of a laser imaging system to locate SF6 leaks. This allows the equipment to be leak checked without required the equipment removed from service.
- Most notable is the repair to the GIS bus installation (Y94) at Buchanan substation.
- The repairs on this piece of equipment resulted in a substantial reduction of SF6 emissions and cost savings.

Con Edison Achieves Goal

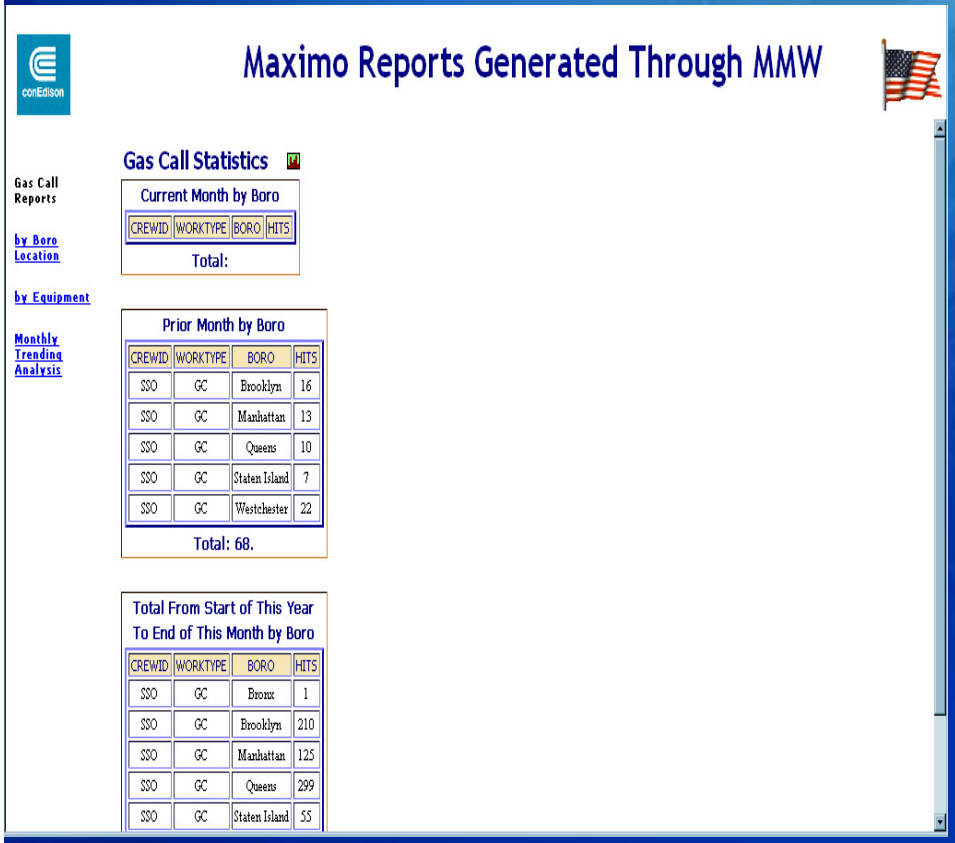
- This reduction of usage and emissions could not have been accomplished without teamwork.
  - SF6 gas leaks were reported (gas calls).
  - Developing a means to trend the gas calls.
  - Provide information to the central engineering department.
- Substation operations and substation engineering developed a plan to repair or replace the equipment.

Collecting the data



- **SF6 Master Work order for gas call on Feeder Y94, in Maximo**
- **There were 308 Sub Work orders to this master work order**
- **Since repairs were made,**
  Zero Gas Calls

Trending The Information



Maximo Reports Generated Through MMW

Gas Call Statistics

Gas Call Reports

by Boro Location

by Equipment

Monthly Trending Analysis

Current Month by Boro

CREWID	WORKTYPE	BORO	HITS
Total:			

Prior Month by Boro

CREWID	WORKTYPE	BORO	HITS
SSO	GC	Brooklyn	16
SSO	GC	Manhattan	13
SSO	GC	Queens	10
SSO	GC	Staten Island	7
SSO	GC	Westchester	22

Total: 68.

Total From Start of This Year To End of This Month by Boro

CREWID	WORKTYPE	BORO	HITS
SSO	GC	Bronx	1
SSO	GC	Brooklyn	210
SSO	GC	Manhattan	125
SSO	GC	Queens	299
SSO	GC	Staten Island	55

- EPRI's Maintenance Management Workstation is used to trend the number of gas calls.
- This information is published on the Substation Operations web page.

EPRI Laser Imaging System

- The laser imaging system is a back scatter laser system.
- This system provides a visible image of the gas leak. It pin points the exact location of the leak without removing the equipment from service.

GIS Bus Dunwoodie Substation

- Using the laser camera, field personnel located leaking welds on a GIS bus at Dunwoodie S/S.
- These leaks were repaired by welding bands over the leaking areas.

GIS BUS Installation

- GIS feeder installation Y94.
- The over length of the feeder is approximately 1200 ft.
- Approximately 300 gas calls were recorded.

Repair of Y94

- First attempt to repair the bus was to use a compound which was developed for natural gas pipe lines, CD5. This compound was applied on two separate occasion with minimal effect.
- The second attempted was to repair the leak employed welding the flanged areas of the entrance bushing. This proved to be ineffective.
- The third plan was to replaced the six entrance bushings on Y94. This repair cost $250,000.00 in equipment and $1,000,000.00 to install the by pass.

Replaced Entrance Bushing